

## CLAIMS

1. A method of manufacturing an optical fibre by carrying out one or more a chemical vapour deposition reactions in a substrate tube, which method comprises the following steps:
  - i) supplying one or more doped or undoped glass-forming precursors to the substrate tube,
  - ii) supplying a stoichiometric excess of oxygen to the substrate tube,
  - iii) setting up a reaction in the substrate tube between the reactants supplied in steps i) and ii) so as to effect the deposition of one or more glass layers on the interior of the substrate tube,
  - iv) subjecting the substrate tube thus coated in step iii) to a collapsing process so as to form a preform, and finally
  - v) drawing said preform into an optical fibre while heating the preform and subsequently cooling said optical fibre, characterized in that the Reynolds number is in accordance with the formula  $120 < Re < 285$  during the deposition process according to step iii), wherein the Reynolds number is calculated on the basis of the reactants supplied to the substrate tube in step i) and step ii), under the temperature and pressure conditions that prevail in the interior of the substrate tube during step iii).
2. A method according to claim 1, characterized in that a pressure of 4-35 mbar is used during step iii).
3. A method according to any one or more of the preceding claims, characterized in that the substrate tube has a temperature of 1000-1150 °C during step iii).
4. A method according to any one or more of the preceding claims, characterized in that a stoichiometric excess of oxygen of ranging from 1.8-5.0 is used during step ii).
5. A method according to any one or more of the preceding

claims, characterized in that step iii) comprises the forming of a plasma within the substrate tube so as to effect the deposition of one or more glass layers.

6. A method according to claim 5, characterized in that the plasma zone is moved with respect to the substrate tube during step iii).
- 5 7. A method according to any one or more of the preceding claims, characterized in that a deposition rate of at least 2 g/min is used in step iii).